Recognizing Illnesses that Might be Due to Bioterrorism

Healthcare providers should be alert to the illness patterns and diagnostic clues that might signal an unusual infectious disease outbreak due to the intentional release of a biological agent and report these concerns immediately to the appropriate local health department. The covert release of a biological agent will not have an immediate impact because of the delay between exposure and onset of illness. Consequently, the first indication of a biologic attack may only be identified when ill patients present to physicians or other healthcare providers for clinical care.

Any unusual illness or disease clusters, and individual suspect cases of cutaneous or inhalation anthrax should be reported immediately to your local health department. Physicians in New York City should call the New York City Department of Health during business hours at one of the following temporary numbers: 212-295-5658, 347-538-0961, 347-538-0925 or 347-538-0855, or the Poison Control Center after hours at 212-764-7667 or 1-800-222-1222.

1. Cutaneous Anthrax: Skin infection usually begins as a small papule, and progresses to a vesicle in 1-2 days followed by a blackened eschar (necrotic ulcer). The lesion is usually painless and the tissue surrounding the skin lesion is often erythematous, and may have varying degrees of edema. Patients also may have fever, malaise, headache and regional lymphadenopathy. The case fatality for cutaneous anthrax is 20% without and 1% with antibiotic treatment. Cutaneous anthrax is not easily transmissible from person to person, although there is a very low risk of infection if there is direct contact with the drainage from an open sore. The incubation period is from 1-12 days.

A highly suspicious case of cutaneous anthrax is:

1 - Any person with a skin lesion fitting the description above

OR

2 - Any person with a possibly compatible skin lesion even if it does not fit the classical description, if any one of the following are present:

a. a history of working in or having contact with a person who works in a major media establishment or other high-risk setting, particularly if the patient handles mail

OR

b. a history of exposure to a threatening letter with powder

OR

c. laboratory evidence suggestive of possible *B. anthracis* infection (including Gram positive bacilli on Gram stain from a skin lesion or sterile fluid, or encapsulated non-motile non-hemolytic Gram positive bacilli on culture from any bodily fluid or site).

2. Inhalational and Other Systemic Forms of Anthrax: Initial symptoms of inhalational anthrax are mild and non-specific and may include fever, malaise and mild cough or chest pain; acute symptoms of respiratory distress, x-ray evidence of mediastinal widening, fever and shock follow in 3-5 days, with death often shortly thereafter. Incubation period usually 1-7 days, but up to 60 days is possible. Meningeal anthrax is characterized by fever, shock and meningeal signs. Intestinal anthrax is rare and is characterized by severe gastrointestinal symptoms. These forms of anthrax have a high case fatality rate and are not transmitted from person to person.

Immediately report any suspect cases of the more severe forms of anthrax:

Any previously healthy patient with the following clinical presentations:

- - A severe, unexplained febrile illness or death,

- - Sepsis or respiratory failure with a widened mediastinum, or

- Sepsis with gram-positive rods or a *Bacillus species* identified in the blood or cerebrospinal fluid. Clinical microbiology laboratories should take care not to regard all isolates of *Bacillus* species as contaminants, especially if isolated from sterile sites {blood, cerebrospinal fluid} and/or multiple cultures are positive from the same patient. All sterile site *Bacillus* isolates should be further evaluated, and if non-motile and non-hemolytic, or if

the clinical syndrome is suggestive of anthrax, the isolates should be immediately referred to the New York State Wadsworth Laboratory or the NYC Public Health Laboratory for further testing.

3. Unusual Illness or Disease Clusters: The following clinical and epidemiological clues are suggestive of an unusual illness or disease cluster:

- · Any unusual increase or clustering in patients presenting with clinical symptoms that suggest an infectious disease outbreak (e.g., ≥ 2 patients presenting with an unexplained febrile illness associated with sepsis, pneumonia, adult respiratory distress, mediastinitis, or rash; or a botulism-like syndrome with flaccid muscle paralysis, especially if occurring in otherwise healthy individuals)

- · Any suspected or confirmed communicable disease that is not endemic in New York (e.g., anthrax, plague, smallpox, or viral hemorrhagic fever). See attached table outlining the clinical issues of the most likely bioterrorist agents.

- · Any unusual age distributions or clustering for a rare or common disease (e.g., chickenpox or measles in adults)

- · Any sudden increase in the following non-specific syndromes, especially if illness is occurring in previously healthy individuals and if there is an obvious common site of exposure:
  - § Respiratory illness with fever
  - § Gastrointestinal illness
  - § Encephalitis or meningitis
  - § Neuromuscular illness (e.g., botulism)
  - § Fever with rash
  - § Bleeding disorders

- · Simultaneous disease outbreaks in human and animal populations

- · Any unusual temporal and/or geographic clustering of illness (e.g., persons who attended the same public event or religious gathering)

Some infections caused by biological agents present with distinctive signs that can provide valuable diagnostic clues. In previously healthy persons presenting with a febrile illness, the following signs and symptoms are highly suggestive of infection with certain biological agents:

Diagnostic sign	**Disease**
Widened mediastinum:	Inhalational anthrax
Pneumonia with hemoptysis:	Pneumonic plague
Vesicular/pustular rash starting on face and hands, with all lesions at the same stage of development:	Smallpox

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Most of the potential pathogens that could be used as a biologic weapon (e.g., anthrax, plague, and smallpox) would present initially as a non-specific influenza-like illness. Therefore, an unusual pattern of respiratory or influenza-like illness (i.e., occurring out of season or large numbers of previously healthy patients presenting simultaneously) should prompt clinicians to alert the local health department. These disease patterns might represent an early start to the influenza season, the introduction of a new pandemic strain, or could be the initial warning of a bioterrorist event.